

WHAT IS CLAIMED IS:

- 1                   1.     A process for the preparation of a robust microfluidics device  
2     having at least one interconnect, comprising:  
3                   positioning at least one elastomeric portion onto a rigid substrate, said  
4     elastomeric portion containing, or said elastomeric portion defining together with  
5     said substrate, at least one fluid passage;  
6                   providing at least one interconnect to said elastomeric portion;  
7                   encapsulating said elastomeric portion(s) and said interconnect(s) with  
8     a curable resin which exhibits volumetric contraction upon curing, said resin  
9     surrounding said elastomer portion and at least a portion of said substrate; and  
10                  curing said curable resin to provide an encapsulated microfluidics  
11     device, whereby said curable resin presses said elastomeric portion against said  
12     substrate.
- 1                   2.     The process of claim 1 wherein said substrate is glass.
- 1                   3.     The process of claim 1 wherein said interconnect is a fluid  
2     supply tubing or fluid receiving tubing.
- 1                   4.     The process of claim 1 wherein said interconnect is a fiber  
2     optical cable.
- 1                   5.     The process of claim 1 wherein at least two fluid supply  
2     and/or fluid receiving tubing interconnects are present.
- 1                   6.     The process of claim 1 wherein said encapsulating resin is a  
2     transparent resin.
- 1                   7.     The process of claim 1 wherein said encapsulating resin is an  
2     epoxy resin.

1                   8.     The process of claim 1 wherein said substrate and said  
2     elastomeric portions are located within a cavity in a frame, and said encapsulating  
3     resin is introduced into said cavity.

1                   9.     The process of claim 8 wherein said frame is a two-part  
2     frame.

1                   10.    A microfluidics device prepared by the process of claim 1.

1                   11.    A microfluidics device prepared by the process of claim 2.

1                   12.    A microfluidics device prepared by the process of claim 3.

1                   13.    A microfluidics device prepared by the process of claim 4.

1                   14.    A microfluidics device prepared by the process of claim 5.

1                   15.    A microfluidics device prepared by the process of claim 6.

1                   16.    A microfluidics device prepared by the process of claim 7.

1                   17.    A microfluidics device prepared by the process of claim 8.

1                   18.    A microfluidics device prepared by the process of claim 9.

1                   19.    A microfluidics device prepared by the process of claim 1,  
2     wherein metal tubing interconnects which protrude from the encapsulated device in  
3     a defined configuration adapted to be inserted into correspondingly configured fluid  
4     supply lines are in fluid communication with one or more microfluidic passages in  
5     said device.